

# National Cancer Mortality and Incidence in Japan

by Minoru Kurihara\*

In Japan cancer mortality statistics have been prepared by site, sex, and age group since 1937. The trends in age-adjusted death rates for selected sites from 1937 to 1975 in intervals of two or three years, and the age-adjusted death rates for some sites by prefecture in 1968-1972 were summarized. Concerning the accuracy of cancer mortality statistics, special consideration should be given to senility in Japan. In 1975 deaths due to senility accounted for 4.3% of all deaths for all ages.

Though the regional cancer registration was being operated in 16 prefectures in Japan as of 1976, the incidence rates were published for only six prefectures. The percentage of cases registered from death certificate only in six registries in Japan was compared with that in the registries in the United States, indicating that the completeness of registration was yet unsatisfactory in Japan. As an index of accuracy of diagnosis, the percentage of cases confirmed histologically was also compared.

## Mortality Statistics in Japan

In Japan vital statistics have been prepared since 1899, but only after 1937 have statistics been prepared for cancer mortality by site, sex, and age group. Cancer mortality up to 1962 was reported in 1965 in the English literature (1). The Ministry of Health and Welfare has published mortality statistics for malignant neoplasms as a vital statistics special report twice, once in 1961 and later in 1973 (2, 3). These reports give the mortality statistics from 1950 to 1971 for all Japan and by prefecture.

## Trends in Mortality

Figure 1 and Table I give the trends in age-adjusted death rates for selected sites from 1937 to 1975 in intervals of two or three years computed by using Segi's world population (4) as standard. Due to the war, vital statistics could not be prepared for a three-year period from 1944 to 1946. For all sites (leukemia and Hodgkin's disease were not included prior to 1949) a peak was observed among the males in 1968-1969 and among the females in 1958-1959, but in recent years there is a trend for the rates to decline slightly. The rate of stomach cancer which has the

highest rate in Japan has shown a trend to decline among the males from 1960-1961 and among the females from 1958-1959 and in comparison with the peak rate it showed a decrease of 20% among the males and of 22% among the females in 1974-1975. However, this decline in rate in Japan has appeared more than 30 years later than the comparable decline observed in the United States as early as 1930.

Cancer of the uterus has shown a consistent decreasing trend from 1937, and the rate for 1974-1975 is only one-third that of 1937-1938. Cancer of the esophagus among the females has also shown a trend to decrease.

In contrary to these, cancer of the intestine, rectum, pancreas, lung, ovary, and prostate and leukemia have shown an increasing tendency, the increase being remarkable for cancer of the pancreas, lung, and prostate.

## Mortality by Area

The number of cancer deaths by prefecture, site, and sex and the crude death rates are given in the aforementioned special reports (2, 3). The Department of Public Health, Tohoku University has published the age-adjusted rates by prefecture for selected sites by the indirect method (1, 5-7). For some sites the Ministry of Health and Welfare has published the age-specific death rates and the age-adjusted rates by the direct method for 1960, 1965

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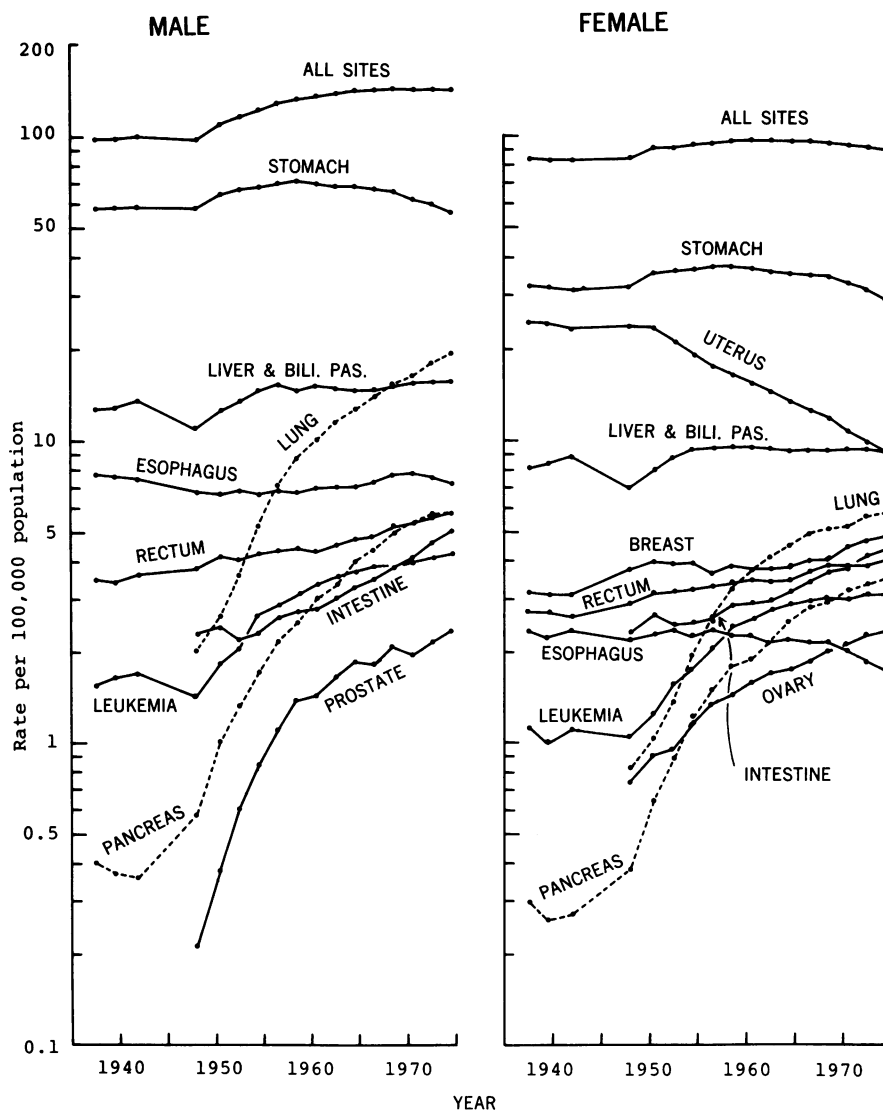


FIGURE 1. Trends in age-adjusted death rates for cancer of selected sites in Japan (Standard: Segi's world population).

and 1970 (8-10). Though the number of deaths by prefecture, site and age has not been published, these are kept at the Ministry of Health and Welfare in special tables. Using these figures Segi et al. (1) have calculated the death rates for selected sites by prefecture and age-group and also the age-adjusted rates for 1958-1962 and for 1963-1967. As similar rates were recently computed for 1968-1972, a summary will be presented.

The difference by area is great for cancer of the esophagus. In comparison with the national average, the rates for the males range from a minimum of 45% to a maximum of 149% and the rates for the females range from 51% to 201%. A remarkable regional clustering has been observed, the rate being high in the northern part of Honshu (mainland) and low in

the western part of Honshu. (Fig. 2a).

As pointed out in the past, stomach cancer shows a high rate along the coast of Japan Sea of northern Japan and in Nara Prefecture and a low in western Japan especially in southern Kyushu. (Fig. 2b) The magnitude of decrease in comparison with that of 1958-1962 showed a positive correlation with the level of national resources, especially the economic level of the residents (12).

Cancer of the liver showed a high rate in western Japan including Kyushu, but a low rate in northern Honshu. (Fig. 2c).

Cancer of the pancreas presented a high rate in northern Japan but a low rate in western Japan. (Fig. 2d).

As described earlier, cancer of the lung has shown

**Table 1a. Age-adjusted death rates for cancer of selected sites in Japan.**

Year	Death rates per 100,000 population <sup>a</sup>											
	All sites		Buccal cavity and pharynx		Esophagus		Stomach <sup>b</sup>		Intestines (except rectum)		Rectum <sup>c</sup>	
	M	F	M	F	M	F	M	F	M	F	M	F
1937-1938	98.4	84.0	—	—	7.81	2.35	58.24	32.21	—	—	3.49	2.73
1939-1940	98.1	82.9	—	—	7.68	2.23	58.48	31.65	—	—	3.42	2.69
1941-1943	100.2	82.8	—	—	7.51	2.34	58.74	31.19	—	—	3.62	2.60
1944-1946	—	—	—	—	—	—	—	—	—	—	—	—
1947-1949	96.6	83.9	—	—	6.77	2.18	58.05	32.11	2.30	2.28	3.78	2.88
1950-1951	109.5	90.7	1.40	0.71	6.67	2.29	64.38	35.17	2.42	2.64	4.16	3.10
1952-1953	115.4	91.4	1.43	0.61	6.86	2.36	67.05	36.09	2.21	2.45	4.03	3.14
1954-1955	121.8	92.6	1.26	0.62	6.69	2.24	68.03	36.59	2.31	2.48	4.25	3.19
1956-1957	127.6	94.0	1.22	0.64	6.87	2.36	69.88	37.24	2.58	2.54	4.32	3.29
1958-1959	133.1	96.4	1.32	0.61	6.79	2.26	70.63	37.10	2.72	2.86	4.42	3.37
1960-1961	135.3	96.3	1.32	0.59	6.95	2.26	69.50	36.80	2.79	2.88	4.27	3.44
1962-1963	137.0	95.4	1.35	0.61	7.05	2.13	67.96	35.99	2.97	2.96	4.52	3.38
1964-1965	140.2	94.7	1.37	0.66	7.13	2.21	68.57	35.31	3.32	3.16	4.74	3.46
1966-1967	141.3	94.9	1.38	0.63	7.31	2.15	66.75	34.58	3.50	3.43	4.79	3.66
1968-1969	143.0	93.6	1.48	0.67	7.74	2.16	66.28	34.54	3.82	3.66	5.18	3.85
1970-1971	141.1	91.5	1.60	0.63	7.82	2.02	62.06	32.72	4.09	3.76	5.38	3.81
1972-1973	142.7	90.6	1.52	0.63	7.61	1.86	60.13	31.26	4.59	4.13	5.57	3.86
1974-1975	141.4	87.8	1.67	0.69	7.30	1.72	56.54	28.87	5.03	4.34	5.84	4.02

<sup>a</sup>Standard population: Segi's world population.

<sup>b</sup>Including "duodenum" from 1937 to 1943.

<sup>c</sup>Including "anus" from 1937 to 1949.

**Table 1b. Age-adjusted death rates for cancer of selected sites in Japan.**

Year	Death rates per 100,000 population										
	Liver and biliary passages		Pancreas		Larynx		Lung, bronchus, and trachea		Breast	Uterus	Ovary <sup>a</sup>
	M	F	M	F	M	F	M	F	F	F	F
1937-1938	12.77	8.07	0.40	0.30	—	—	—	—	3.17	24.61	—
1939-1940	12.88	8.31	0.37	0.26	—	—	—	—	3.11	24.19	—
1941-1943	13.70	8.75	0.36	0.27	—	—	—	—	3.11	23.30	—
1944-1946	—	—	—	—	—	—	—	—	—	—	—
1947-1949	10.89	7.00	0.58	0.38	1.79	0.48	2.02	0.81	3.77	23.74	0.74
1950-1951	12.44	7.96	1.00	0.65	1.79	0.54	2.65	1.02	3.97	23.24	0.91
1952-1953	13.25	8.66	1.31	0.87	1.84	0.51	3.61	1.37	3.89	21.11	0.94
1954-1955	14.68	9.32	1.72	1.20	1.67	0.49	5.25	1.94	3.95	19.25	1.16
1956-1957	15.20	9.36	2.18	1.49	1.68	0.48	7.07	2.58	3.65	17.78	1.32
1958-1959	14.74	9.50	2.52	1.78	1.53	0.42	8.64	3.25	3.86	16.54	1.42
1960-1961	15.07	9.46	3.02	1.88	1.58	0.38	9.97	3.67	3.76	15.51	1.57
1962-1963	14.88	9.27	3.33	2.16	1.44	0.35	11.45	4.09	3.76	14.60	1.69
1964-1965	14.60	9.19	3.97	2.52	1.52	0.32	12.64	4.46	3.80	13.47	1.74
1966-1967	14.66	9.28	4.43	2.79	1.53	0.33	13.97	4.86	3.99	12.72	1.86
1968-1969	15.05	9.19	5.02	2.93	1.47	0.27	15.21	5.08	4.02	11.90	2.00
1970-1971	15.36	9.32	5.38	3.17	1.57	0.26	16.25	5.16	4.43	10.74	2.10
1972-1973	15.52	9.29	5.69	3.35	1.51	0.22	17.91	5.58	4.64	9.92	2.26
1974-1975	15.65	9.08	5.82	3.50	1.46	0.20	19.27	6.73	4.82	9.16	2.33

<sup>a</sup>Ovary, Fallopian tube, and broad ligament

**Table 1c. Age-adjusted death rates for cancer of selected sites in Japan.**

Year	Death rates per 100,000 population.								
	Prostate M	Bladder and other urinary organs <sup>a</sup>		Skin		Thyroid gland		Leukemia	
		M	F	M	F	M	F	M	F
1937-1938	—	—	—	0.98	0.64	—	—	1.56	1.13
1939-1940	—	—	—	0.96	0.67	—	—	1.63	1.09
1941-1943	—	—	—	1.22	0.83	—	—	1.70	1.10
1944-1946	—	—	—	—	—	—	—	—	—
1947-1949	0.21	0.97	0.61	0.88	0.71	0.09	0.19	1.41	1.03
1950-1951	0.38	1.20	0.60	0.88	0.66	0.11	0.21	1.82	1.23
1952-1953	0.61	1.29	0.72	0.94	0.69	0.10	0.23	2.04	1.55
1954-1955	0.84	1.71	0.78	0.92	0.68	0.14	0.30	2.68	1.75
1956-1957	1.09	1.74	0.91	0.94	0.72	0.15	0.34	2.87	2.05
1958-1959	1.39	1.92	0.89	0.97	0.70	0.17	0.42	3.09	2.40
1960-1961	1.43	2.05	1.03	0.83	0.65	0.21	0.46	3.35	2.56
1962-1963	1.65	2.19	1.06	0.87	0.67	0.24	0.47	3.56	2.76
1964-1965	1.85	2.19	0.98	0.83	0.57	0.25	0.51	3.72	2.87
1966-1967	1.82	2.38	1.09	0.79	0.62	0.30	0.53	3.82	2.96
1968-1969	2.08	2.33	0.99	0.82	0.54	0.31	0.50	3.82	2.99
1970-1971	1.95	2.19	0.95	0.79	0.56	0.28	0.56	3.98	2.99
1972-1973	2.15	2.40	0.96	0.78	0.52	0.29	0.57	4.12	3.10
1974-1975	2.34	2.31	0.90	0.70	0.48	0.33	0.59	4.19	3.09

<sup>a</sup>“Bladder” only from 1968 to 1975.

a remarkable increase in recent years with changes in geographical characteristics, continuing to show a high rate in prefectures having large cities such as Tokyo and Osaka. The geographical difference by prefecture has made an apparent decrease (Fig. 2c).

Breast cancer shows the highest rate in Tokyo, but many prefectures in western Japan have a low rate. (Fig. 2f)

Cancer of the uterus has shown a high rate in Kyushu, but a low rate in northern Honshu. (Fig. 2g)

Leukemia has presented a high rate in both sexes in several prefectures, but no evident regional clustering could be noted (Fig. 2h).

The staff of the Department of Public Health of Tohoku University have made a study on the regional distribution in Japan using the death rates by city and county, a smaller geographical unit of observation (13-16). The maps showing the death rates by city and county for cancer of selected sites have been published recently (17). It is possible to learn in greater detail the regional characteristics by using a smaller area for observation, but because the population size becomes smaller, a longer period of observation is necessary. In Japan, mortality statistics by region are usually prepared according to administrative districts, but because these administrative

districts are being changed through amalgamation, long-term observation has become difficult.

## Morbidity Statistics in Japan

Regional cancer registration in Japan was commenced by Segi (18) in 1951 in Miyagi Prefecture, and the first cancer morbidity statistics in Japan were published for 1951-1952. This registration program was suspended for five years from 1954, but thanks to the support provided by the NIH of the United States registration was resumed in 1959, and this program was taken over by Health Department of Miyagi Prefecture in 1972. A detailed publication on morbidity statistics for the period from 1959 to 1973 was recently released (19). In 1957 cancer registration was initiated in Hiroshima City and Nagasaki City through the support provided by ABCC (20). In 1962 cancer registration was begun in Osaka Prefecture and Hyogo Prefecture, and at present such registration is being made in 16 prefectures (21). However, incidence rates have been published for only six prefectures of Miyagi, Okayama, Osaka, Kanagawa, Hyogo, and Tottori. In the first volume of *Cancer Incidence in Five Continents* (22), the incidence data of Miyagi Prefecture (1959-1960)

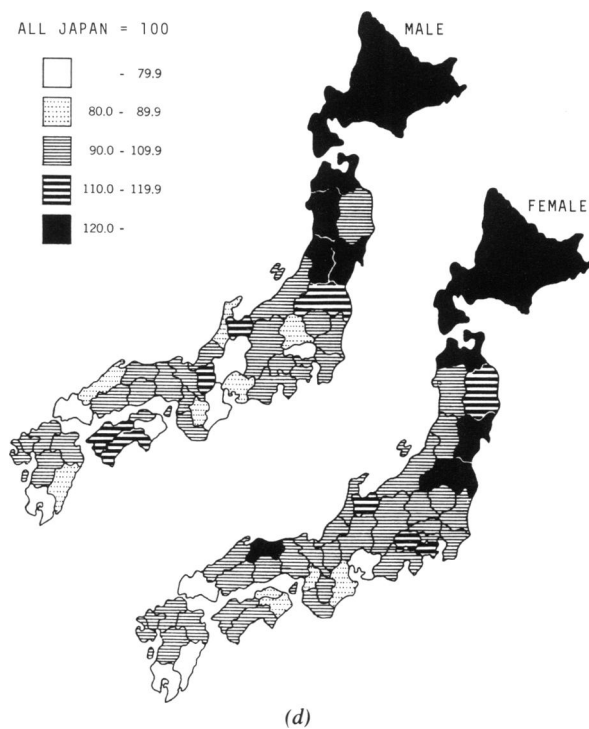
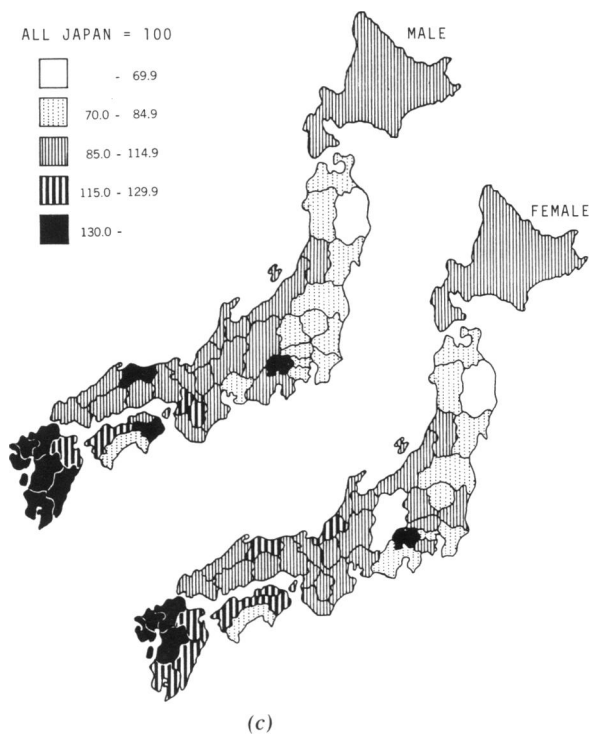
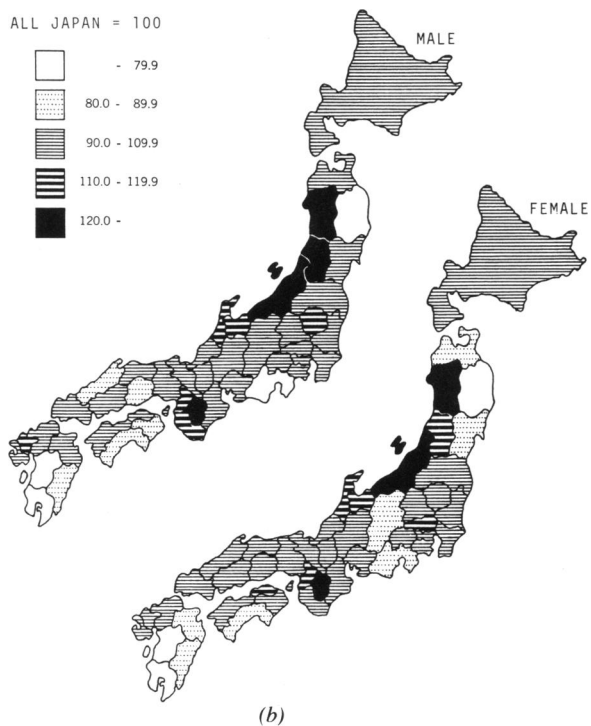
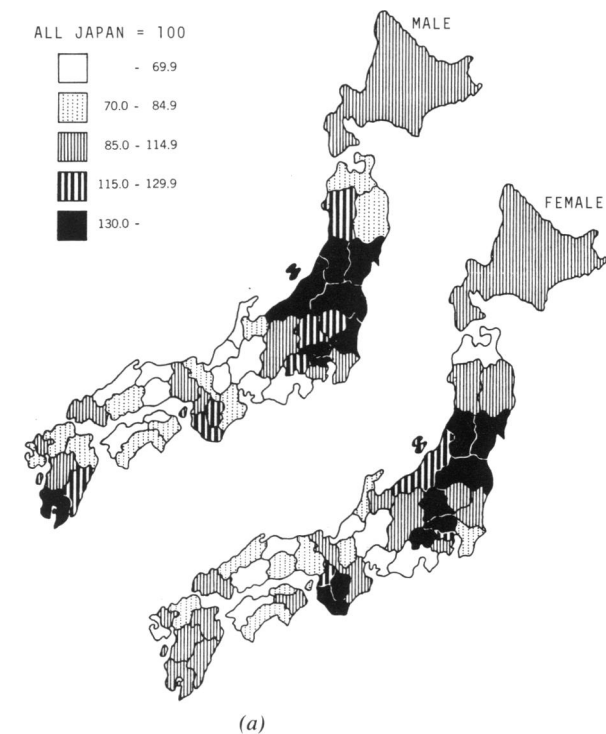


FIGURE 2. Age-adjusted death rates for cancer of selected sites by prefecture in Japan, 1968-1972: (a) esophagus; (b) stomach; (c) liver (including specified as secondary and unspecified); (d) pancreas. Standard: total population in Japan, 1950.

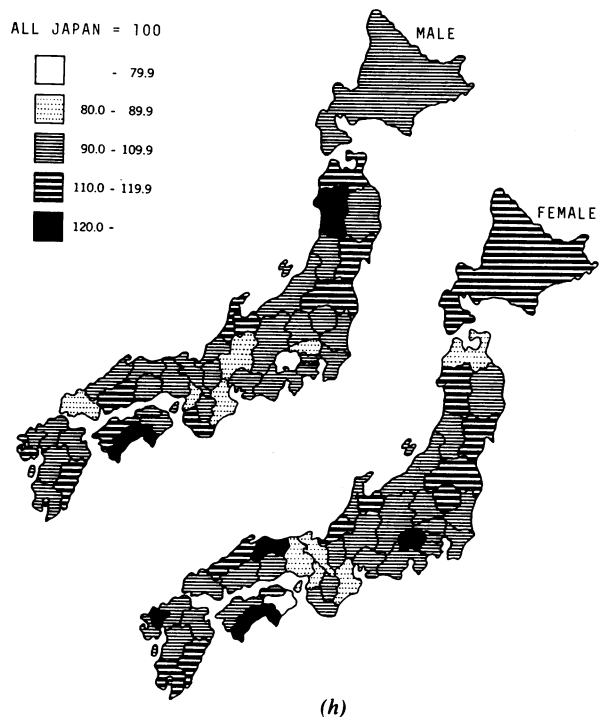
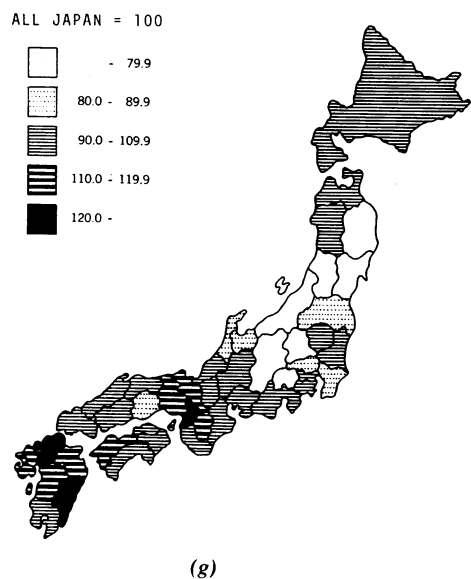
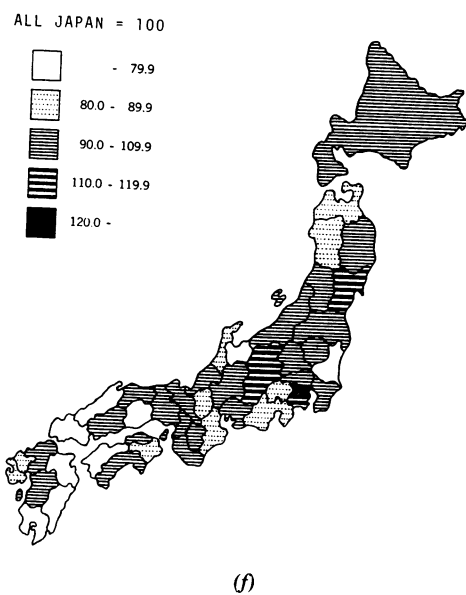
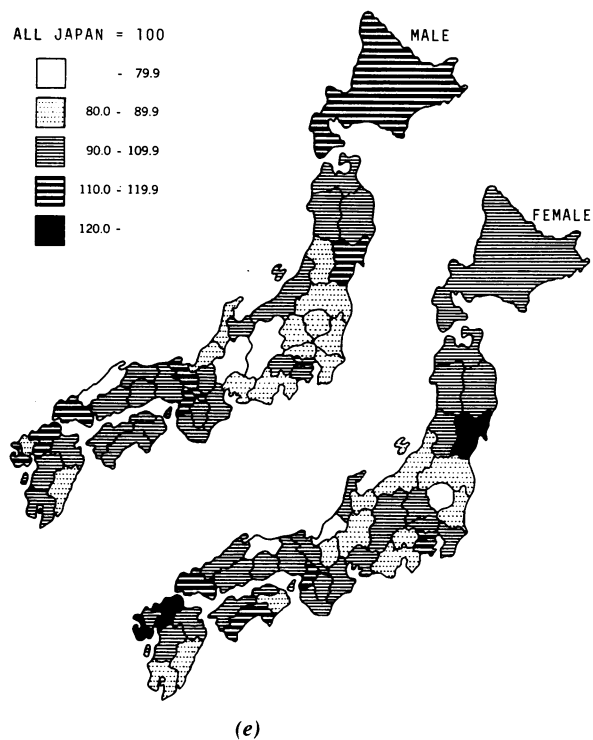


FIGURE 2. Age-adjusted death rates for cancer of selected sites by prefecture in Japan, 1968-1972: (e) lung; (f) breast; (g) uterus; (h) leukemia. Standard: total population in Japan, 1950.

**Table 2. Age-adjusted incidence rates for cancer of selected sites in six Prefectures in Japan.**

Site	Sex	Rate per 100,000 population <sup>a</sup>					
		Miyagi (1968-1971)	Okayama (1969)	Osaka (1970-1971)	Kanagawa (1970)	Hyogo (1971-1972)	Tottori (1969-1970)
All sites	M	185.1	183.9	207.4	204.0	173.9	205.3
	F	127.7	160.4	142.6	149.7	125.7	153.2
Esophagus	M	12.9	4.6	9.7	10.8	7.9	3.8
	F	4.1	2.1	2.8	1.9	2.0	1.5
Stomach	M	84.0	90.2	91.1	86.6	74.4	108.0
	F	39.7	48.3	45.1	48.4	38.1	51.7
Colon	M	5.6	5.0	6.3	6.6	5.4	5.2
	F	5.3	4.7	5.0	6.2	4.2	4.6
Rectum	M	6.8	7.0	6.9	8.2	6.0	5.9
	F	5.0	5.5	5.0	6.3	4.2	6.4
Liver <sup>b</sup>	M	9.4	—	16.3	11.3	—	18.0
	F	4.5	—	7.3	6.2	—	7.7
Pancreas	M	7.2	3.8	5.9	7.0	5.6	5.1
	F	4.4	2.3	3.0	4.7	3.2	4.3
Lung	M	20.4	17.5	23.5	21.0	22.3	17.3
	F	6.9	6.7	6.9	6.9	6.6	5.0
Breast	F	12.7	16.6	12.0	13.1	9.5	15.7
Uterus <sup>c</sup>	F	23.9	34.3	28.9	24.7	27.7	25.5
Leukemia	M	4.6	4.0	4.1	5.1	3.9	3.8
	F	3.7	1.9	3.1	3.5	3.0	2.6

<sup>a</sup>Standard: Doll's World Population.

<sup>b</sup>Including "unspecified (197.8)".

<sup>c</sup>Including "carcinoma in situ of cervix uteri (234.0)." From The Research Group for Population-Based Cancer Registration (21).

**Table 3. Age-adjusted incidence rates and death rates for cancer of selected sites in Miyagi Prefecture.**

Site	Sex	Rate per 100,000 population <sup>a</sup>			
		1959-1961	1962-1964	1965-1967	1968-1971
Incidence rates					
All sites	M	193.2	194.2	192.1	185.1
	F	153.2	141.2	153.4	127.7
Stomach	M	95.4	95.3	91.2	84.0
	F	47.2	44.7	43.9	39.7
Lung	M	14.9	15.6	17.9	20.0
	F	5.4	5.9	6.7	6.9
Breast	F	12.6	11.0	13.9	12.7
Uterus	F	34.2	27.1	32.1	23.9 <sup>b</sup>
Leukemia	M	3.7	4.4	4.2	4.6
	F	2.7	2.7	3.7	3.7
Death rates					
All sites	M	149.6	151.7	152.7	148.6
	F	98.8	97.1	96.7	91.7
Stomach	M	72.0	67.0	67.5	63.1
	F	35.7	31.5	32.3	29.6
Lung	M	12.0	14.4	15.3	18.3
	F	4.5	5.8	6.0	6.2
Breast	F	4.1	3.4	4.9	4.9
Uterus	F	13.4	12.6	10.4	8.3 <sup>b</sup>
Leukemia	M	3.7	4.1	4.0	4.7
	F	2.2	2.9	2.9	3.8

<sup>a</sup>Standard: Doll's World Population.

<sup>b</sup>Including "carcinoma in situ of cervix uteri (234.0)"

alone are recorded, but in the second volume (23) data of Miyagi Prefecture (1962-1964) and Okayama Prefecture (1966), while in the third volume (24) are recorded the data of Miyagi Prefecture (1968-1971), Okayama Prefecture (1969), and Osaka Prefecture (1970-1971).

Table 2 gives the age-adjusted incidence rates of cancer of selected sites in the foregoing six prefectures (21). The rate for cancer of the esophagus is high in Miyagi Prefecture and low in Tottori. Cancer of the colon shows a high incidence in Kanagawa. The incidence of lung cancer among the males is high

in Osaka and Hyogo and low in Tottori and Osaka, but that among the females is low only in Tottori with hardly any difference in incidence in the other five prefectures. Breast cancer shows a high incidence in Tottori and Okayama, while cancer of the uterus is high in Okayama and low in Miyagi.

It was possible to observe the changes in incidence rates in Miyagi Prefecture from 1959 (19). For selected sites the incidence rates are shown together with the mortality rates in Table 3 and Figure 3. The incidence of stomach cancer in both sexes shows a decline which runs almost parallel to the mortality

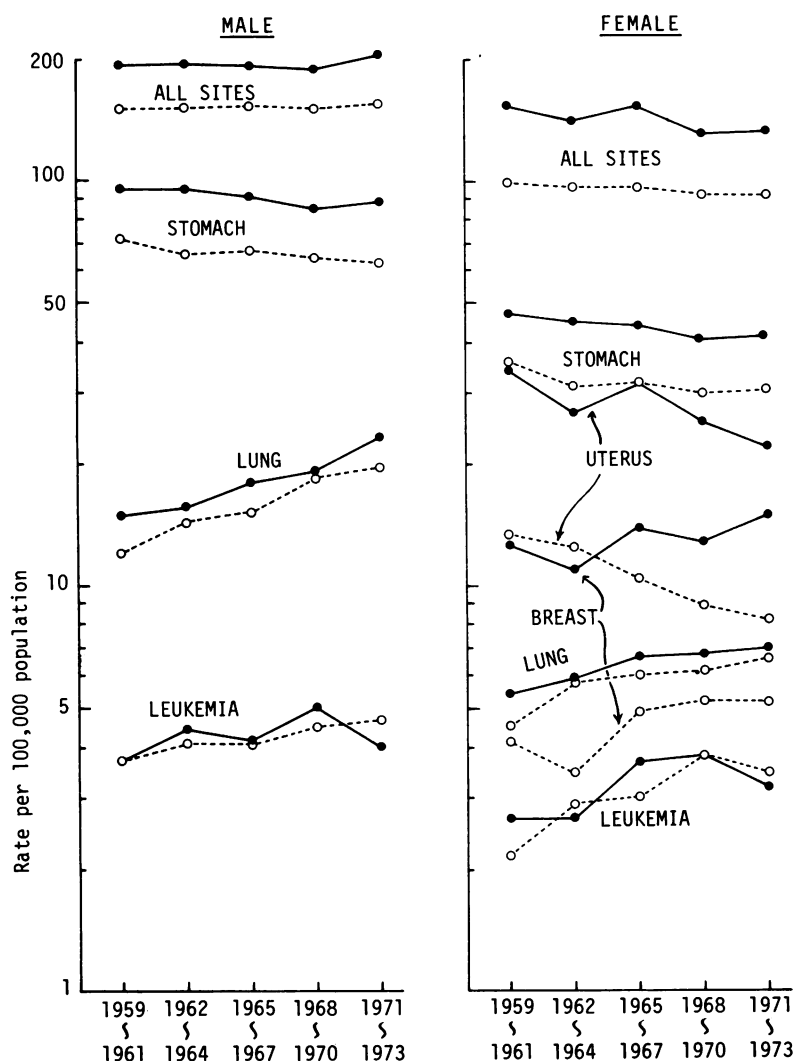


FIGURE 3. Trends in age-adjusted incidence rates and death rates for cancer of selected sites in Miyagi prefecture, Japan: (●—) incidence rate; (○ - -) death rate. (Standard: Doll's world population).



rate of stomach cancer. The decline in the morbidity rate of cancer of the uterus is more gradual than the mortality rate for cancer of the uterus.

For a matter of comparison, the morbidity rates (25) and mortality rates (26) of cancer of the stomach and uterus observed in Connecticut in 1949-1962 are shown in Figure 4. Both the incidence rate and mortality rate of stomach cancer show a remarkable decline with both rates running almost parallel, but for cancer of the uterus the mortality rate has declined but the morbidity rate has elevated.

The decline in the mortality rate of stomach cancer which only began in the recent years in Japan was first observed more than 30 years ago in the United States. It is speculated that this decline, similar to that in the United States, is attributable to primarily to the decrease in the development rather than the effect of therapy. The decrease in the mortality rate for cancer of the uterus in the United States is attributable to the remarkable decrease in lethality rate due to the effect of therapy, but in Japan the reduced development also adds to the decreased death rate.

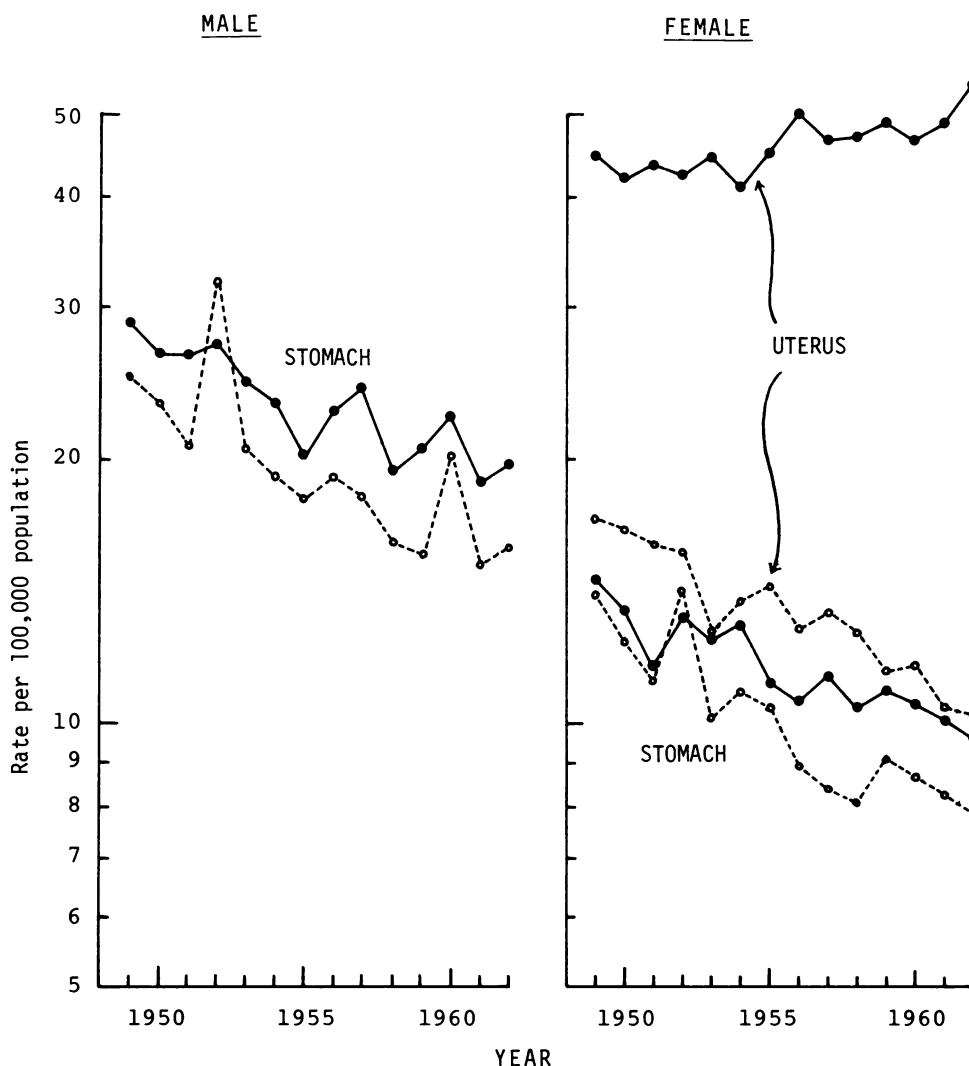


FIGURE 4. Trends in age-adjusted incidence rates and death rates for cancer of stomach and uterus in Connecticut, U.S.A.: (●—) incidence rate; (○ - -) death rate. (Standard: Population of the Continental United States, 1950).

# Accuracy of Cancer Statistics in Japan

## Mortality Data

There are many factors which affect the accuracy of mortality statistics, but in cancer deaths special consideration should be given to senility. In 1975 deaths due to "senility without mention of psychosis" accounted for 4.3% of all deaths in Japan and occupied the 6th place in the leading causes of death,

which is remarkably higher than 0.06% observed in whites and 0.12% in nonwhites in the United States in 1972.

On the other hand, the cancer mortality rate by age group in Japan shows a peculiar characteristic of declining at higher ages. Figures 5 and 6 show the death rates by age-group for cancer of all sites and stomach cancer in Japan for 1975 and in the United States for 1972. The mortality rate in Japan reaches the maximum at the age of 80-84 and at ages 85 and

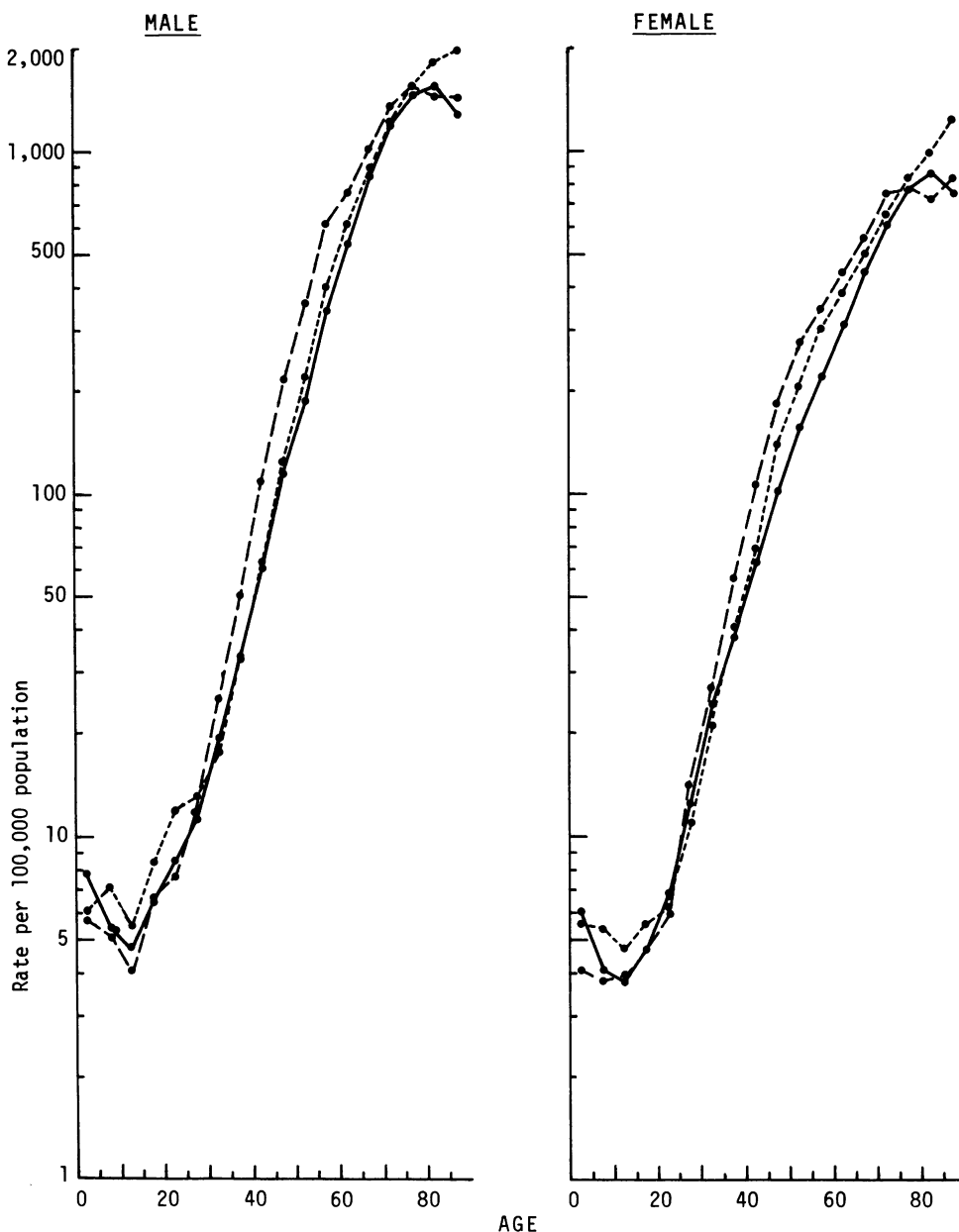


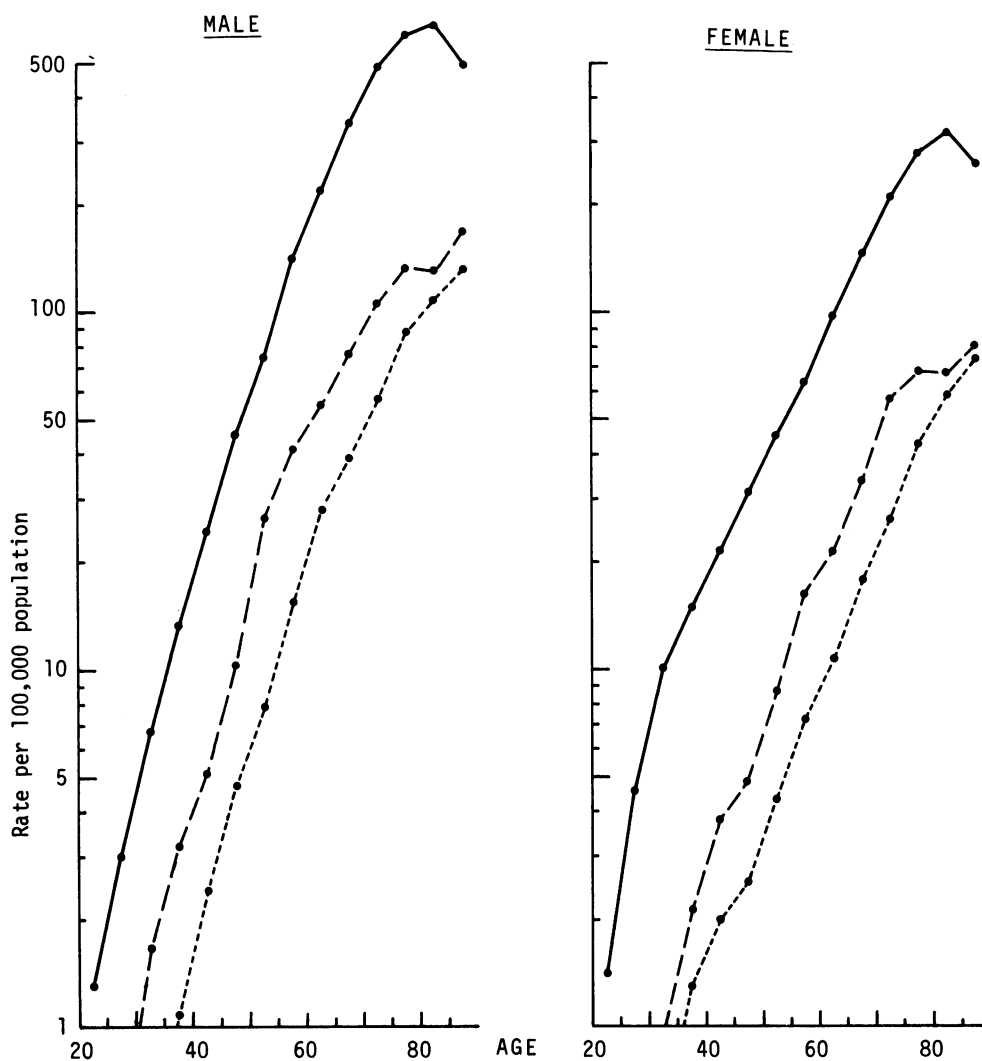
FIGURE 5. Death rates by age-group for cancer of all sites in Japan for 1975 and in the United States for 1972: (—●—) Japan; (---●---) U.S. white 1972; and (·····●·····) U.S. nonwhite 1972.

over the rate is lower than that at the age of 75-79. The proportion of deaths due to senility among all deaths is shown in Table 4 by sex and age-group. It accounts for 16% of those 85 and over among the males and 21% among the females of the same age. Under the assumption that the proportion of cancer deaths among all deaths excluding those due to senility is similar to the proportion of cancer deaths among deaths due to senility, a computation of the mortality rates by age-group for cancer of all sites and stomach cancer was made as shown in Figure 7. The decrease in the rate of those 85 and over is considerably reduced though not dissolved.

Furthermore, the proportion of deaths due to

**Table 4. Percentage of number of deaths from "senility without mention of psychosis" to total number of deaths by sex and age group, Japan, 1975.**

Age, year	Senility deaths, %	
	Male	Female
All ages	2.7	6.0
60-64	0.1	0.1
65-69	0.3	0.5
70-74	1.2	1.7
75-79	3.2	4.6
80-84	7.5	10.2
≥ 85	16.3	21.2



**FIGURE 6. Age-specific death rates for cancer of stomach in Japan and United States: (—●—) Japan 1975; (---●---) U.S. white 1972; (---○---) U.S. nonwhite, 1972.**

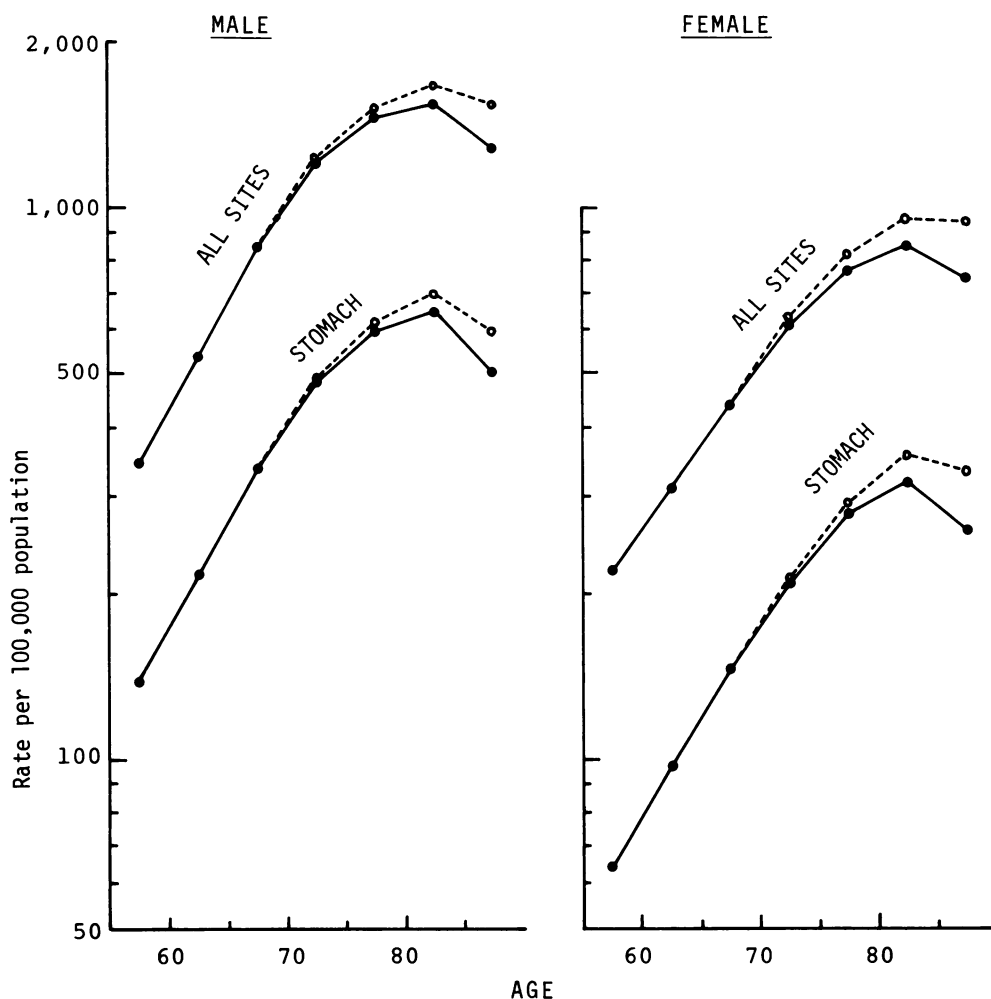


FIGURE 7. Age-specific death rates for cancer of all sites and stomach in Japan: (—○—) under the assumption that deaths from senility include cancer deaths.

senility has recently shown a sudden decrease. As can be seen in Figure 8, the diagnosis of cause of death of about one-half of the deaths occurring in 1955 at the age of 85 and over was senility. On the left side of Figure 9 are shown the trends in age-specific death rates for stomach cancer from 1956-1957 to 1974-1975. The age groups lower than the 70-74 age group show a trend to decrease, whereas those 80 and over show a sudden increase. The trends of death rates computed under this assumption are shown on the right side. In the males of age 80 and over, the increase has become remarkably shallow, while in the females of age 80 and over the increase can hardly be observed. A remarkable trend for the death rate to increase in the old age-group has been observed in cancer of many sites and is not limited to stomach cancer, but it may be said that a considerable fraction of this increase is attributable to the

decrease in deaths with diagnosis of senility.

From these findings it cannot be denied that the accuracy of cancer mortality statistics in Japan becomes inferior especially at high ages. This evaluation may also apply to the morbidity rates in Japan.

### Morbidity Data

Morbidity rates are computed using population-based regional registration data. The percentage of cases registered from death certificate only is employed as an index of completeness of registration, and the values obtained by various registries in Japan and the United States are shown in Table 5. This percentage in Japan is very much higher than that in the United States, indicating that the completeness of cancer registration is still unsatisfactory. The percentage was especially high for Kanagawa and Hyogo. This is considered to be the reason why the

statistics submitted for publication were not included in *Cancer Incidence in Five Continents*.

As index of accuracy of diagnosis the percentage of cases confirmed histologically is used, and the values obtained in Japan and the United States are shown in Table 6. Miyagi showed the highest per-

centage but this was only 39% for the males and 47% for the females. The lowest percentage in the United States was observed among the Spanish in New Mexico with 72% for the males and 76% for the females. This demonstrates the great difference existing between Japan and the United States. We are

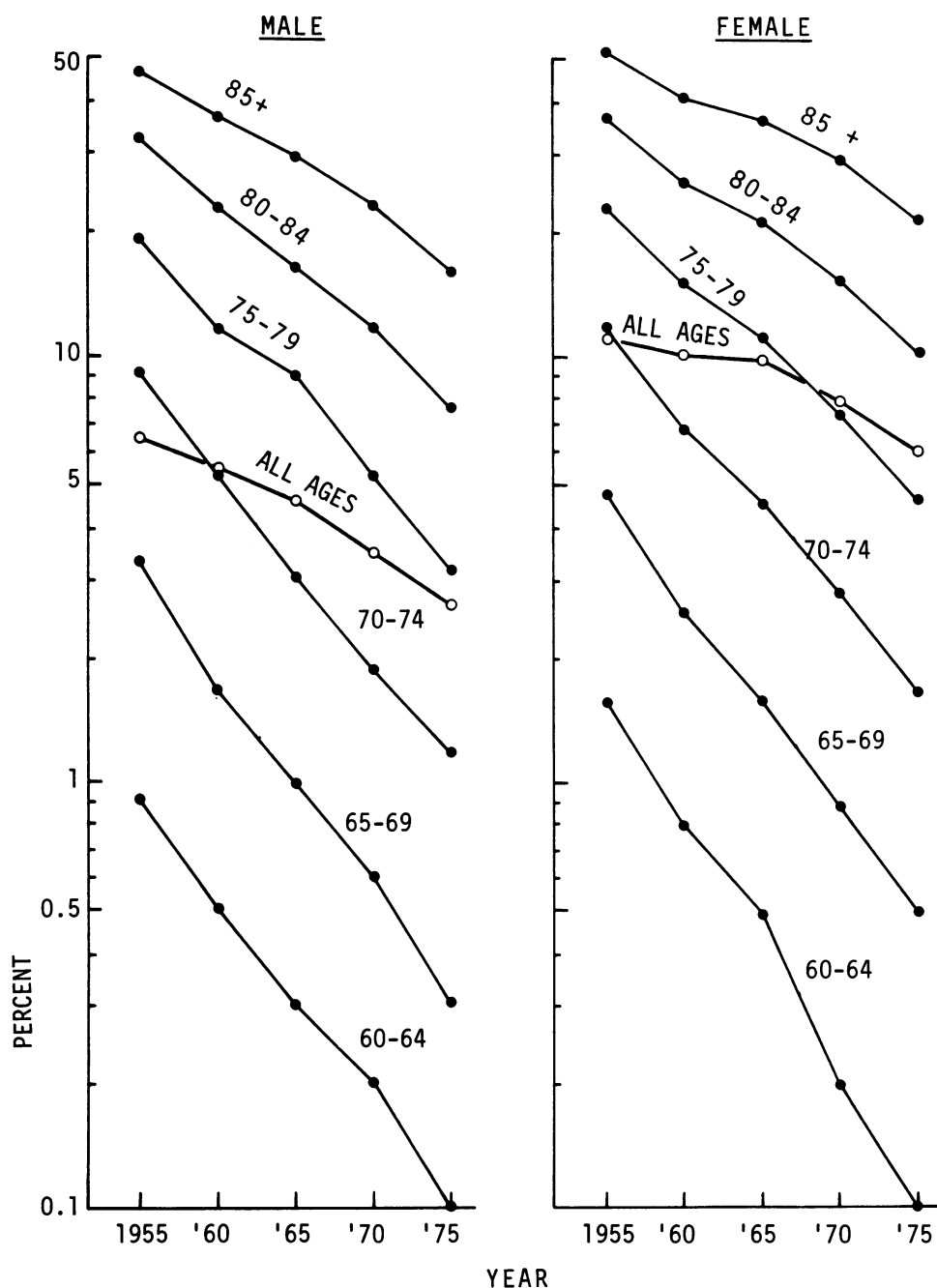


FIGURE 8. Trends in percentage of deaths from "senility without mention of psychosis" by age group in Japan.

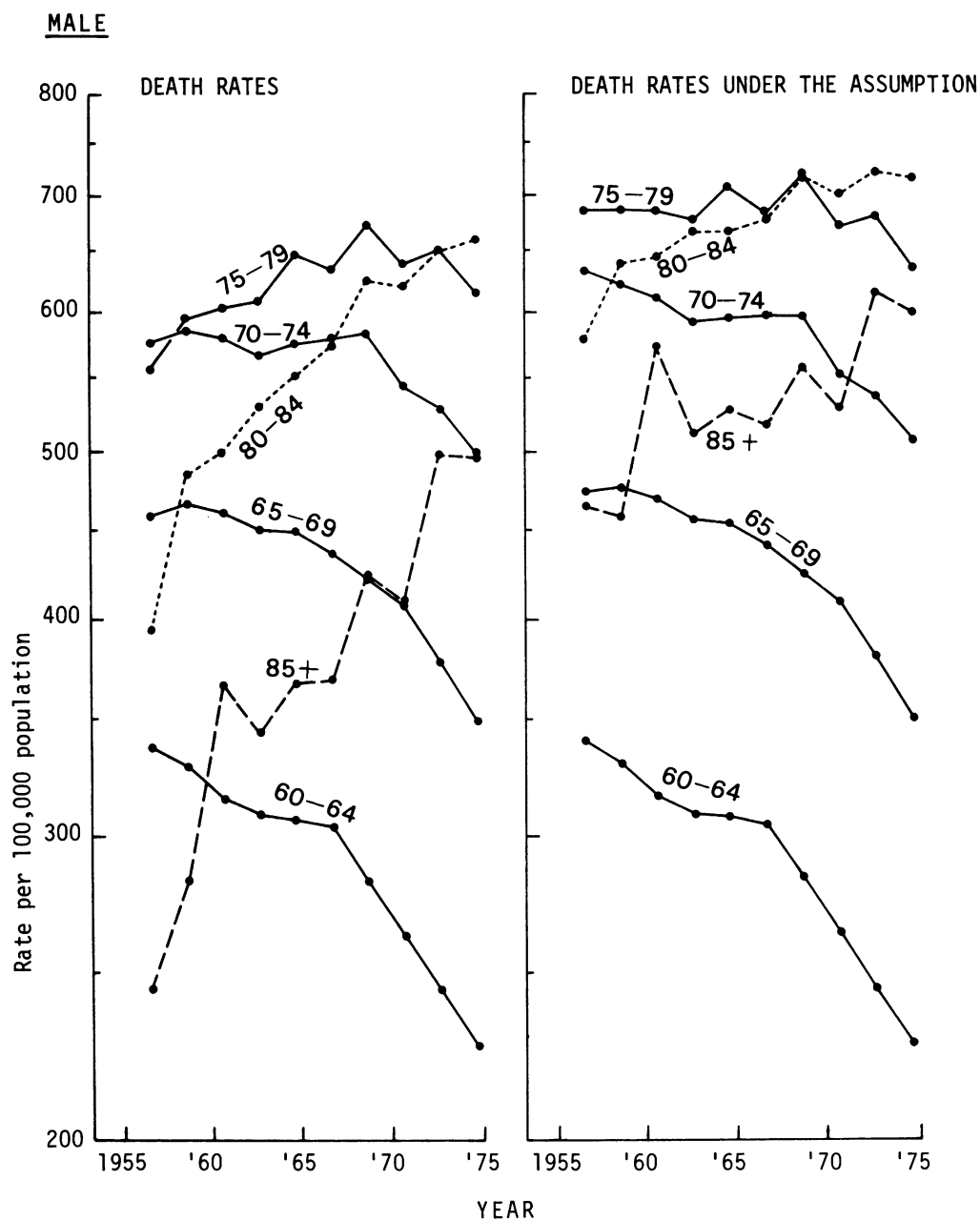


FIGURE 9. Trends in age-specific death rates for cancer of the stomach in Japan.

thus obliged to accept the evaluation that the accuracy of diagnosis in Japan is inferior. However, according to the comparison made by Jablon et al. (27) between the diagnosis recorded on death certificates and the autopsy diagnosis and according to the comparison made by Takeda et al. (28) between the clinical diagnosis and the autopsy diagnosis, the accu-

racy of the clinical diagnosis of cancer excluding cancer of the liver, biliary passages, and pancreas is not very inferior. The difference in accuracy of cancer diagnosis between Japan and the United States can be considered not to be as large as the difference between the two countries as observed by the percentage of cases confirmed histologically.

**Table 5. Percentage of cancer cases registered from death certificate only, all sites (except skin in the United States).<sup>a</sup>**

	Year	Ethnic group (if specified)	Cancer Cases, %	
			Male	Female
Japan				
Miyagi	1968-1971		31	26
Okayama	1969		9	9
Osaka	1970-1971		35	31
Kanagawa	1970		46	40
Hyogo	1971-1972		62	55
Tottori	1969-1970		31	28
United States				
Alameda	1969-1972	White	2	1
		Black	1	1
Bay Area	1969-1972	White	2	1
		Black	1	1
		Chinese	2	1
Connecticut	1968-1972		2	2
Iowa	1969-1971		3	3
Detroit	1969-1971	White	3	2
		Black	2	2
New Mexico	1969-1972	Spanish	16	16
		Other White	16	15
		American Indian	14	8
El Paso	1968-1970	Spanish	9	6
		Other White	17	10
Puerto Rico	1968-1972		9	7
Utah	1966-1970		3	3

<sup>a</sup>From The Research Group for Population-based Cancer Registration (21) and Waterhouse, et al. (24).

**Table 6. Percentage of cases confirmed histologically, all sites (except skin in the United States).<sup>a</sup>**

	Year	Ethnic group (if specified)	Cancer cases, %	
			Male	Female
Japan				
Miyagi	1968-1971		39	47
Okayama	1969		30	43
Osaka	1970-1971		30	37
Kanagawa	1970		21	31
Hyogo	1971-1972		19	29
Tottori	1969-1970		24	33
United States				
Alameda	1969-1972	White	91	93
		Black	93	92
Bay Area	1969-1972	White	91	93
		Black	92	92
		Chinese	85	90
Connecticut	1968-1972		90	92
Iowa	1969-1971		85	89
Detroit	1969-1971	White	88	92
		Black	88	90
New Mexico	1969-1972	Spanish	72	76
		Other White	74	81
		American Indian	77	84
El Paso	1968-1970	Spanish	84	91
		Other White	82	86
Puerto Rico	1968-1972		82	87
Utah	1966-1970		86	88

<sup>a</sup>From The Research Group for Population-Based Cancer Registration (21) and Waterhouse, et al. (24).

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